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60 EAST SOUTH TEMPLE
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EXAMINER	
WANG, JIN CHENG	
ART UNIT	PAPER NUMBER
2628	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/764,622	Applicant(s) STAMM ET AL.	
	Examiner Jin-Cheng Wang	Art Unit 2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 9-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 9-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's submission filed on 10/20/2006 has been entered. Claim 8 has been canceled. Claims 1, 9, 16 and 20 have been amended. Claims 1-7 and 9-21 are pending in the present application.

Response to Arguments

Applicant's arguments filed 10/20/2006 have been fully considered but are moot in view of the new ground(s) of rejection set forth below.

The amended Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaasila U.S. Patent No. 5, 155,805 (hereinafter Kaasila) in view of Stamm U.S. Patent No. 6,249,908 (hereinafter Stamm), Kurachi U.S. Patent No. 5,471,550 (hereinafter Kurachi) and Bloomberg et al. RE38,758 (hereinafter Bloomberg).

Kaasila discloses, in Fig. 8, the font instructions have been applied to the spline outlines of lowercase letter "o" in which the projection and freedom vectors are determined for control points. The control point 9 has a projection vector being set to the X-axis such that it is readily determined/measured that the first angle is 0 degree and the second angle is 90 degree. **Accordingly, the freedom vector is set to the x-axis** with the first angle being smaller than the second angle; see column 8, lines 20-40 wherein **the freedom vector is set to the x-axis while satisfying the distance constraints between the control points**. Fig. 8 also shows that the projection and freedom vectors are determined for a plurality of control points. The control point 9 has a projection vector being set to the Y-axis such that it is readily determined/measured that

the first angle is 90 degree and the second angle is 0 degree. Accordingly, **the freedom vector is set to the y-axis** with the second angle being smaller than the first angle,; see column 8, lines 20-40 wherein the freedom vector is set to the y-axis while satisfying the distance constraints between the control points. See column 8 and column 10, lines 1-45. Kaasila set the freedom vector without the use of (manual) hinting instructions.

Kaasila teaches using a freedom vector setting module (*font instructions setting the freedom vectors; see column 8, lines 20-38*), **setting the first direction of freedom** (*See Figs. 12A-13 wherein the freedom vectors are set including setting the first freedom vector to line 6-7 and setting the second freedom vector to line 8-7 in that order; see also column 9-10*), **wherein setting the first direction of freedom comprises the acts of: determining an appropriate order for setting directions of freedom for the graphical object prior to setting any directions of freedom** (*See Figs. 12A-13 wherein the first freedom vector to line 6-7 is set before he second freedom vector to line 8-7 is set for the character "Y"; see also column 9-10*) **so as to reduce the likelihood of numerical errors when the graphical object is rendered** (*See Figs. 12A-13 and column 9-10 and in particular column 10, lines 40-45 wherein the cited reference teaches that the freedom vector tells the control point the direction it should move and the proper definition of the freedom vectors allow the balance of the diagonal stroke weight of letter "Y" be achieved and thus effectively enhance digita, typeface or font data that is capable of providing resulting bitmap at low raster resolution wherein such method produce grid-aligned outlines for output to other raster output devices and thus reducing the likelihood of numerical errors in which the visual deterioration will not occur because the control points of the outline are made to coincide with the discrete grid position corresponding to the resolution of the raster*

display device; see column 8, lines 15-20 for the claim limitation of "numerical errors"); **and setting the direction of the first direction of freedom to the direction of the first axis** (*e.g., the cited reference at column 9 discloses setting the first direction of freedom to the coordinate axis wherein setting the freedom vectors is based on the characters; see column 8-9 wherein the cited reference teaches setting the first freedom vector to the coordinate axis for the letter "O"*) **before setting a direction of a second direction of freedom based on the determination** (*See Figs. 12A-13 wherein the first freedom vector to line 6-7 is set before he second freedom vector to line 8-7 is set for the character "Y"; see also column 9-10*).

Although Kaasila does not explicitly disclose the claim limitation of "calculating a first angle between a first direction of compliance and a first axis; calculating a second angle between the first direction of compliance and a second axis; and comparing the calculated first angle with the calculated second angle and determining that the first angle is smaller than the second angle", Kaasila at least suggests the claim limitation for the reasons as follows.

Kaasila discloses that the projection vector specifies a direction along which the difference in distance between the original position of the control point and the desired position of the control point is **measured**. *Specifying the projection vector also determines or calculates the first angle between the projection vector and the X-axis and the second angle between the projection vector and the Y-axis*. Thus, a first angle between the first direction of compliance and an X-axis and a second angle between the first direction of compliance and a Y-axis are readily determined/calculated from the projection vector. For example, in Fig. 8, the font instructions have been applied to the spline outlines of lowercase letter "o" in which the projection and freedom vectors are determined/calculated for control points. The control point 9 has a projection

vector being set to the X-axis such that it is readily determined/calculated that the first angle is 0 degree and the second angle is 90 degree from the vectors thus determined/calculated. **Accordingly, the freedom vector is set to the x-axis** with the first angle being smaller than the second angle; see column 8, lines 20-40 wherein the freedom vector is set to the x-axis while **satisfying the distance constraints between the control points**. Moreover, Fig. 8 also shows that the projection and freedom vectors are determined for a plurality of control points. The control point 9 has a projection vector being set to the Y-axis such that it is readily determined/measured that the first angle is 90 degree and the second angle is 0 degree. Accordingly, **the freedom vector is set to the y-axis** with the second angle being smaller than the first angle; see column 8, lines 20-40 wherein the freedom vector is set to the y-axis while satisfying the distance constraints between the control points.

Stamm discloses control point data structure comprising a number of fields including the freedom vector, minimum distance, move exception, and the relationship type data filed wherein the freedom direction data field indicates the direction the control point can be moved, for example, roman, italic or the adjusted italic. The freedom direction specifies the direction/angle the control point can be moved including a first angle between a first direction of compliance and a first axis and a second angle between the first direction of compliance and a second axis. For the freedom direction data field being zero, the control point can be moved parallel to the grid lines. For the freedom direction data field being 2, the control point can be moved both perpendicular or parallel to **the adjusted italic angle**. See column 9-10 of Stamm. Moreover, **the x-direction or the y-direction data are further determined/calculated/converted from a number of data fields in the control point data structure** (see column 15-16). For one thing,

the font table also determines values for features of a glyph such as stem width or serif length and the cvt category data field indicates whether the relationship specifies a stroke or distance that corresponds to the cvt table (See column 10). Therefore, Stamm discloses "calculating a first angle between a first direction of compliance and a first axis" by converting the control point data fields into the x-direction data and the y-direction data, thereby calculating a first angle between a first direction of compliance of the control point and the x-axis. In a similar manner, Stamm discloses "calculating a second angle between a second direction of compliance and a second axis" by converting the control point data fields into the x-direction data and the y-direction data, thereby calculating a second angle between a first direction of compliance and the y-axis, and determining that the first angle being smaller than the second angle by determining the type of Type Man Talk command and the parameters for the Type Man Talk command to graphically edit and display the fonts.

Therefore, taking the combined teaching of Kaasila and Stamm, it would have been obvious to one of the ordinary skill in the art to have modified Kaasila's method to include a calculation of the first angle and the second angle, comparing the first angle with the second angle and determining the first angle being smaller than the second angle. Doing so would allow the generation of a variety of font programs/instructions in editing and graphically displaying a glyph (**Stamm column 17-18; Kaasila column 8, lines 20-40**).

Kaasila and Stamm do not explicitly teach the comparison of the two angles within the claim limitation of "using an axis comparison module, automatically and dynamically determining a first direction of freedom based on a comparison of at least two angles defined by the first direction of compliance and first and second axes".

Kaasila discloses that the projection vector specifies a direction along which the difference in distance between the original position of the control point and the desired position of the control point is **measured**. *Specifying the projection vector also determines or calculates the first angle between the projection vector and the X-axis and the second angle between the projection vector and the Y-axis.* Thus, a first angle between the first direction of compliance and an X-axis and a second angle between the first direction of compliance and a Y-axis are readily determined/calculated/**compared** from the projection vector and the two angles are inherently compared by determining the first direction of compliance such as the projection vector. For example, in Fig. 8, the font instructions have been applied to the spline outlines of lowercase letter "o" in which the projection and freedom vectors are determined/calculated for control points. The control point 9 has a projection vector being set to the X-axis such that it is readily determined/calculated/compared that the first angle is 0 degree and the second angle is 90 degree from the vectors thus determined/calculated/compared and the two angles are readily compared in the calculations/determination. **Accordingly, the freedom vector is set to the x-axis** with the first angle being smaller than the second angle wherein the two angles are compared; see column 8, lines 20-40 wherein the freedom vector is set to the x-axis while **satisfying the distance constraints between the control points**. Moreover, Fig. 8 also shows that the projection and freedom vectors are determined for a plurality of control points. The control point 9 has a projection vector being set to the Y-axis such that it is readily determined/measured/compared that the first angle is 90 degree and the second angle is 0 degree. Accordingly, **the freedom vector is set to the y-axis** with the second angle being smaller than the first angle; see column 8,

lines 20-40 wherein the freedom vector is set to the y-axis while satisfying the distance constraints between the control points.

Kurachi explicitly teaches a comparison of the two angles (See column 10, lines38-60). Kurachi teaches using an axis comparison module to determine a first direction of freedom wherein it is judged/compared whether the angle along the reference axis (x-axis of y-axis) falls within a predetermined correction angle range by the comparison of the two angles to determine the outline correction amount (See column 13, lines 50-67 and column 14, lines 1-30).

Bloomberg explicitly teaches a comparison of the two angles (See column 17, lines 53-67 and column 18, lines 1-15). Bloomberg teaches using an axis comparison module to determine a first direction of freedom wherein the displacement vector is determined based on a comparison of at least two angles of the X and Y displacement vectors that enable the image processing to jump from one glyph position to the likely position of the next glyph.

Kaasila in view of Kurachi is seen to teach the claim limitation of "using an axis comparison module, automatically and dynamically determining a first direction of freedom based on a comparison of at least two angles defined by the first direction of compliance and first and second axes".

Therefore, taking the combined teaching of Kaasila and Stamm and Kurachi, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to have modified Kaasila and Stamm's method to include a comparison of the first angle and the second angle, comparing the first angle with the second angle and determining the first angle being smaller than the second angle. Doing so would allow the generation of a variety of font programs/instructions in editing and graphically displaying a glyph (**Stamm column 17-18;**

Kaasila column 8, lines 20-40 and Bloomberg column 17, lines 53-67 and column 18, lines 1-15).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-7 and 9-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaasila U.S. Patent No. 5, 155,805 (hereinafter Kaasila) in view of Stamm U.S. Patent No. 6,249,908 (hereinafter Stamm), Kurachi U.S. Patent No. 5,471,550 (hereinafter Kurachi) and Bloomberg et al. RE38,758 (hereinafter Bloomberg).

Claim 1:

Kaasila discloses that, in a computing system that has access to a set of control points, the set of control points for generating an outline of a graphical object, the outline being utilized to determine how the graphical object is rendered on a pixel grid, the location of some control points being constrained to pre-determined locations, a computerized method for dynamically determining one or more directions of freedom for a control point such that the control point can be moved to comply with a corresponding one or more constraints, the method comprising:

Identifying a first function (*e.g., functions are described in column 9, lines 41-67*) that represents a first constraint, solutions to the first function indicating compliance with the first constraint (*e.g., a first constraint being a distance constraint wherein the projection vector specifies in distance between the original position of the control point and the compliance with the distance constraint. The new positions of control point depend upon the freedom vector and the projection vector which are automatically determined by the routines and functions as disclosed in column 9-10 such that the distance constraint is satisfied to the extent that the distance between the desired position of the control point and the original position of the control point is reduced to the minimum possible value; column 9-10*);

Calculating based on the location of the control point and the identified first function (*e.g., the first function is automatically identified depending upon the location of the control point, the freedom vector and the projection vector; column 9-10*), that the control point does not comply with the first constraint (e.g., *the original control point does not comply with the distance constraint as specified such that the distance between the desired control point and the original control point is reduced to a minimum possible and the target control point is iteratively adjusted to the desired position to reduce non-compliance with the desired control point; column 9-10*), and

Identifying a first direction of compliance (e.g., *the original control point does not* ***<u>comply with the distance constraint</u>*** *as specified such that the distance between the desired control point and the original control point is reduced to a minimum possible and the target control point is iteratively adjusted to the desired position* ***<u>to reduce non-compliance with the desired control point</u>****; column 9-10*);

Using the first direction of compliance as determined by the software module, automatically and dynamically determining a first direction of freedom *(For example, in Fig. 8, the font instructions have been applied to the spline outlines of lowercase letter "o" in which the projection and freedom vectors are determined for control points. The control point 9 has a projection vector being set to the X-axis such that it is readily determined/measured that the first angle is 0 degree and the second angle is 90 degree.* ***Accordingly, the freedom vector is set to the x-axis*** *with the first angle being smaller than the second angle; see column 8, lines 20-40 wherein the freedom vector is set to the x-axis while satisfying the distance constraints between the control points. Fig. 8 also shows that the projection and freedom vectors are determined for a plurality of control points. The control point 9 has a projection vector being set to the Y-axis such that it is readily determined/measured that the first angle is 90 degree and the second angle is 0 degree. Accordingly,* ***the freedom vector is set to the y-axis*** *with the second angle being smaller than the first angle,; see column 8, lines 20-40 wherein the freedom vector is set to the y-axis while satisfying the distance constraints between the control points.* See *column 8 and column 10, lines 1-45)* in which the control point can be moved to comply with the first constraint such that movement of the control point in the first direction of freedom has a reduced likelihood of causing non-compliance with other constraints (*e.g., the new positions of control point depend upon the freedom vector and the projection vector which are automatically and dynamically determined by the routines and functions as disclosed in column 9-10 and the step of adjusting the position of the control point along the freedom vectors until a balance of the diagonal stroke weight of letter "Y" is achieved i.e., other constraints associated with the other control points can be satisfied such as the distance between one control point and the other*

control points are maintained for a lowercase letter "o"; column 8-10), wherein automatically and dynamically determining a first direction of freedom in which the control point can be moved to comply with the first constraint comprises the acts of:

Measuring a first angle between a first direction of compliance and a first axis;

Measuring a second angle between the first direction of compliance and a second axis; and

Determining that the first angle is smaller than the second angle (*e.g., Kaasila discloses that the projection vector specifies a direction along which the difference in distance between the original position of the control point and the desired position of the control point is* ***measured****. Specifying the projection vector also determines the first angle between the projection vector and the X-axis and the second angle between the projection vector and the Y-axis. Thus, a first angle between the first direction of compliance and an X-axis and a second angle between the first direction of compliance and a Y-axis are readily determined from the projection vector. For example, in Fig. 8, the font instructions have been applied to the spline outlines of lowercase letter "o" in which the projection and freedom vectors are determined for control points. The control point 9 has a projection vector being set to the X-axis such that it is readily determined/measured that the first angle is 0 degree and the second angle is 90 degree.* ***Accordingly, the freedom vector is set to the x-axis*** *with the first angle being smaller than the second angle; see column 8, lines 20-40 wherein the freedom vector is set to the x-axis while satisfying the distance constraints between the control points. Fig. 8 also shows that the projection and freedom vectors are determined for a plurality of control points. The control point 9 has a projection vector being set to the Y-axis such that it is readily determined/measured*

that the first angle is 90 degree and the second angle is 0 degree. Accordingly, ***the freedom vector is set to the y-axis*** *with the second angle being smaller than the first angle,; see column 8, lines 20-40 wherein the freedom vector is set to the y-axis while satisfying the distance constraints between the control points*);

Using a freedom vector setting module (<u>*font instructions setting the freedom vectors; see column 8, lines 20-38*</u>), **setting the first direction of freedom** (*See Figs. 12A-13 wherein the freedom vectors are set including setting the first freedom vector to line 6-7 and setting the second freedom vector to line 8-7 in that order; see also column 9-10*), **wherein setting the first direction of freedom comprises the acts of:**

Determining an appropriate order for setting directions of freedom for the graphical object prior to setting any directions of freedom (*See Figs. 12A-13 wherein the first freedom vector to line 6-7 is set before he second freedom vector to line 8-7 is set for the character "Y"; see also column 9-10*) **so as to reduce the likelihood of numerical errors when the graphical object is rendered** (*See Figs. 12A-13 and column 9-10 and in particular column 10, lines 40-45 wherein the cited reference teaches that the freedom vector tells the control point the direction it should move and the proper definition of the freedom vectors allow the balance of the diagonal stroke weight of letter "Y" be achieved and thus effectively enhance digita, typeface or font data that is capable of providing resulting bitmap at low raster resolution wherein such method produce grid-aligned outlines for output to other raster output devices and thus reducing the likelihood of numerical errors in which the visual deterioration will not occur because the control points of the outline are made to coincide with the discrete grid position corresponding*

to the resolution of the raster display device; see column 8, lines 15-20 for the claim limitation of "numerical errors"); and

Setting the direction of the first direction of freedom to the direction of the first axis (*e.g., the cited reference at column 9 discloses setting the first direction of freedom to the coordinate axis wherein setting the freedom vectors is based on the characters; see column 8-9 wherein the cited reference teaches setting the first freedom vector to the coordinate axis for the letter "O"*) **before setting a direction of a second direction of freedom based on the determination** (*See Figs. 12A-13 wherein the first freedom vector to line 6-7 is set before he second freedom vector to line 8-7 is set for the character "Y" and the determination is character-specific, i.e., the determination for setting the freedom vectors is based on each of the characters; see also column 9-10*).

Although Kaasila does not explicitly disclose the claim limitation of "calculating a first angle between a first direction of compliance and a first axis; calculating a second angle between the first direction of compliance and a second axis; and comparing the calculated first angle with the calculated second angle and determining that the first angle is smaller than the second angle", Kaasila at least suggests the claim limitation for the reasons as follows.

Kaasila discloses that the projection vector specifies a direction along which the difference in distance between the original position of the control point and the desired position of the control point is **measured**. *Specifying the projection vector also determines or calculates the first angle between the projection vector and the X-axis and the second angle between the projection vector and the Y-axis.* Thus, a first angle between the first direction of compliance and

an X-axis and a second angle between the first direction of compliance and a Y-axis are readily determined/calculated from the projection vector. For example, in Fig. 8, the font instructions have been applied to the spline outlines of lowercase letter "o" in which the projection and freedom vectors are determined/calcualted for control points. The control point 9 has a projection vector being set to the X-axis such that it is readily determined/calculated that the first angle is 0 degree and the second angle is 90 degree from the vectors thus determined/calculated. **Accordingly, the freedom vector is set to the x-axis** with the first angle being smaller than the second angle; see column 8, lines 20-40 wherein the freedom vector is set to the x-axis while **satisfying the distance constraints between the control points**. Moreover, Fig. 8 also shows that the projection and freedom vectors are determined for a plurality of control points. The control point 9 has a projection vector being set to the Y-axis such that it is readily determined/measured that the first angle is 90 degree and the second angle is 0 degree. Accordingly, **the freedom vector is set to the y-axis** with the second angle being smaller than the first angle; see column 8, lines 20-40 wherein the freedom vector is set to the y-axis while satisfying the distance constraints between the control points.

Stamm discloses control point data structure comprising a number of fields including the freedom vector, minimum distance, move exception, and the relationship type data filed wherein the freedom direction data field indicates the direction the control point can be moved, for example, roman, italic or the adjusted italic. The freedom direction specifies the direction/angle the control point can be moved including a first angle between a first direction of compliance and a first axis and a second angle between the first direction of compliance and a second axis. For the freedom direction data field being zero, the control point can be moved parallel to the grid

lines. For the freedom direction data field being 2, the control point can be moved both perpendicular or parallel to **the adjusted italic angle**. See column 9-10 of Stamm. Moreover, **<u>the x-direction or the y-direction data are further determined/calculated/converted from a number of data fields in the control point data structure</u>** (see column 15-16). For one thing, the font table also determines values for features of a glyph such as stem width or serif length and the cvt category data field indicates whether the relationship specifies a stroke or distance that corresponds to the cvt table (See column 10). Therefore, Stamm discloses "calculating a first angle between a first direction of compliance and a first axis" by converting the control point data fields into the x-direction data and the y-direction data, thereby calculating a first angle between a first direction of compliance of the control point and the x-axis. In a similar manner, Stamm discloses "calculating a second angle between a second direction of compliance and a second axis" by converting the control point data fields into the x-direction data and the y-direction data, thereby calculating a second angle between a first direction of compliance and the y-axis, and determining that the first angle being smaller than the second angle by determining the type of Type Man Talk command and the parameters for the Type Man Talk command to graphically edit and display the fonts.

Therefore, taking the combined teaching of Kaasila and Stamm, it would have been obvious to one of the ordinary skill in the art to have modified Kaasila's method to include a calculation of the first angle and the second angle, comparing the first angle with the second angle and determining the first angle being smaller than the second angle. Doing so would allow the generation of a variety of font programs/instructions in editing and graphically displaying a glyph (**<u>Stamm column 17-18; Kaasila column 8, lines 20-40</u>**).

Kaasila and Stamm do not explicitly teach the comparison of the two angles within the claim limitation of "using an axis comparison module, automatically and dynamically determining a first direction of freedom based on a comparison of at least two angles defined by the first direction of compliance and first and second axes".

Kaasila discloses that the projection vector specifies a direction along which the difference in distance between the original position of the control point and the desired position of the control point is **measured**. *Specifying the projection vector also determines or calculates the first angle between the projection vector and the X-axis and the second angle between the projection vector and the Y-axis*. Thus, a first angle between the first direction of compliance and an X-axis and a second angle between the first direction of compliance and a Y-axis are readily determined/calculated from the projection vector and the two angles are inherently compared by determining the first direction of compliance such as the projection vector. For example, in Fig. 8, the font instructions have been applied to the spline outlines of lowercase letter "o" in which the projection and freedom vectors are determined/calculated for control points. The control point 9 has a projection vector being set to the X-axis such that it is readily determined/calculated that the first angle is 0 degree and the second angle is 90 degree from the vectors thus determined/calculated and the two angles are readily compared in the calculations/determination. **Accordingly, the freedom vector is set to the x-axis** with the first angle being smaller than the second angle wherein the two angles are compared; see column 8, lines 20-40 wherein the freedom vector is set to the x-axis while **satisfying the distance constraints between the control points**. Moreover, Fig. 8 also shows that the projection and freedom vectors are determined for a plurality of control points. The control point 9 has a

projection vector being set to the Y-axis such that it is readily determined/measured/compared that the first angle is 90 degree and the second angle is 0 degree. Accordingly, **the freedom vector is set to the y-axis** with the second angle being smaller than the first angle; see column 8, lines 20-40 wherein the freedom vector is set to the y-axis while satisfying the distance constraints between the control points.

Kurachi explicitly teaches a comparison of the two angles (See column 10, lines38-60). Kurachi teaches using an axis comparison module to determine a first direction of freedom wherein it is judged/compared whether the angle along the reference axis (x-axis of y-axis) falls within a predetermined correction angle range by the comparison of the two angles to determine the outline correction amount (See column 13, lines 50-67 and column 14, lines 1-30).

Bloomberg explicitly teaches a comparison of the two angles (See column 17, lines 53-67 and column 18, lines 1-15). Bloomberg teaches using an axis comparison module to determine a first direction of freedom wherein the displacement vector is determined based on a comparison of at least two angles of the X and Y displacement vectors that enable the image processing to jump from one glyph position to the likely position of the next glyph.

Kaasila in view of Kurachi is seen to teach the claim limitation of "using an axis comparison module, automatically and dynamically determining a first direction of freedom based on a comparison of at least two angles defined by the first direction of compliance and first and second axes".

Therefore, taking the combined teaching of Kaasila and Stamm and Kurachi, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to have modified Kaasila and Stamm's method to include a comparison of the first angle and the

second angle, comparing the first angle with the second angle and determining the first angle being smaller than the second angle. Doing so would allow the generation of a variety of font programs/instructions in editing and graphically displaying a glyph (**Stamm column 17-18; Kaasila column 8, lines 20-40 and Bloomberg column 17, lines 53-67 and column 18, lines 1-15**).

Claim 2:

Kaasila further discloses the claim limitation of processing instructions included in a set of control points (column 10, lines 1-45; see also column 7-8).

Re Claim 3:

Kaasila further discloses the claim limitation of identifying a first function that represents one of a distance constraint and a proportion constraint (e.g., a first constraint being a distance constraint wherein the projection vector specifies in distance between the original position of the control point and the desired position of the control point; see column 9-10 and a proportion constraint is determined by the inner product of unit freedom vector and projection vector).

Claim 4:

Kaasila further discloses the claim limitation of determining that using the control point as input to the first function does not result in a value that approximates a zero for the first function (e.g., moving the control point a predetermined distance being non-zero so that the control point can be moved and applying font instruction including Delta exceptions and projection and freedom vectors to adjust the diagonal stroke of "Y"; see column 10, lines 1-45).

Re Claims 5-6:

Kaasila further disclose the claim limitation of automatically and dynamically determining that the first direction of freedom is to be in the direction of X-axis or Y-axis (e.g., the freedom and projection vectors are dynamically and automatically set to the x-axis or y-axis; see column 8, lines 20-40 and column 10, lines 1-45).

Claim 7:

Kaasila further discloses the claim limitation of moving the control point in the first direction of freedom to comply with the first constraint (*e.g., the new positions of control point depend upon the freedom vector and the projection vector which are automatically determined by the routines and functions as disclosed in column 9-10 and the step of adjusting the position of the control point along the freedom vectors until a balance of the diagonal stroke weight of letter "Y" is achieved, i.e., other constraints associated with the other control points can be satisfied; column 7-10*).

Re Claim 9:

Kaasila further discloses the claim limitation of identifying a second function that represents a second constraint, solutions to the second function indicating compliance with the second constraint; and using the first direction of compliance to set a second direction of freedom perpendicular to the first direction of compliance, the second direction of freedom indicating a direction in which the control point can move to comply with the second constraint (e.g., column 10, lines 1-45; see also column 8-10).

Re Claim 10:

Kaasila further discloses the claim limitation of setting the second direction of freedom to the direction of the second axis by applying font instructions (column 8-10).

Re Claims 11-12:

Kaasila further discloses the claim limitation of setting the second direction of freedom to the direction of an X-axis or Y-axis (e.g., Repeating the step of moving the control point and setting the direction of freedom vector until a balance of the diagonal stroke weight of letter "Y" is achieved including setting the freedom vector to the x-axis or y-axis by the application of font instructions; see column 8-10).

Re Claim 13:

Kaasila further discloses the claim limitation of setting the second direction of freedom to a diagonal direction (e.g., Repeating the step of moving the control point and setting the direction of freedom vector until a balance of the diagonal stroke weight of letter "Y" is achieved including setting the freedom vector to the diagonal direction in relation to the projection vector by the application of font instructions; see column 8-10).

Claim 14:

Kaasila further discloses the claim limitation of moving the control point along the second direction of freedom to comply with the second constraint in a manner that does not result in non-compliance with the first constraint (e.g., the freedom vector tells the control point the direction it should move and the projection vector determines the desired distance projection between control points and these vectors are used in calculating the resulting vector for determining the new position of control point until a balanced diagonal stroke weight of letter "Y" is achieved; see column 8-10).

Claim 15:

Kaasila further discloses the claim limitation of receiving a set of control points representing a character of text (e.g., the freedom vector tells the control point the direction it should move and the projection vector determines the desired distance projection between control points and these vectors are used in calculating the resulting vector for determining the new position of control point until a balanced diagonal stroke weight of letter "Y" is achieved; see column 8-10).

Claim 16:

Kaasila teaches that, in a computing system that has access to a set of control points, the set of control points for representing an outline of a graphical object, a method for setting the direction of freedom vectors for one or more of the control points, the method comprising:

For each control point in the set of control points, determining the number of constraints the control point is to comply with (*e.g., Delta except ions permit user of font rendering engines to quickly correct and adjust the outlines of a glyph over a significant range of resolution to enhance typeface with raster output devices at a resolution; the set of control points are illustrated in column 7-9 and the number of constraints the control point is to comply with are described in column 7-10 in which the freedom and projection vector are means to move control points in desired direction and to measure distances along the projection vector and these two vectors are manipulated iteratively*);

When the control point is to comply with one or more constraints:

Identifying a first projection vector corresponding to a first constraint, compliance with the first constraint being determined by measuring a distance from the control point, in the direction of the first projection vector, to another portion of the outline or to a pre-determined

location (*e.g., column 10, lines 1-45 in which the control point is iteratively adjusted in accordance with the font instructions and the freedom vector and projection vector are determined in which the projection vector specifies a direction along which the difference in distance between the original position of the control point and the desired position of the control point is measured and the freedom vector specifies the direction a selected control point should move; the control points are manipulated with freedom and projection vectors in a plurality of lines; see Fig. 12*);

Using a software module to automatically and dynamically determine a first direction of freedom based on the direction of the first projection vector in which the control point can be moved to comply with the first constraint by at least determining the direction of the first projection vector is closer to the direction of a first axis than to the direction of a second axis, the first axis being perpendicular to the second axis (*e.g., e.g., Kaasila discloses that the projection vector specifies a direction along which the difference in distance between the original position of the control point and the desired position of the control point is* ***measured****. Specifying the projection vector also determines the first angle between the projection vector and the X-axis and the second angle between the projection vector and the Y-axis. Thus, a first angle between the first direction of compliance and an X-axis and a second angle between the first direction of compliance and a Y-axis are readily determined from the projection vector. For example, in Fig. 8, the font instructions have been applied to the spline outlines of lowercase letter "o" in which the projection and freedom vectors are determined for control points. The control point 9 has a projection vector being set to the X-axis such that it is readily determined/measured that the first angle is 0 degree and the second angle is 90 degree.* ***Accordingly, the freedom vector is set to***

the x-axis *with the first angle being smaller than the second angle; see column 8, lines 20-40 wherein the freedom vector is set to the x-axis while satisfying the distance constraints between the control points. Fig. 8 also shows that the projection and freedom vectors are determined for a plurality of control points. The control point 9 has a projection vector being set to the Y-axis such that it is readily determined/measured that the first angle is 90 degree and the second angle is 0 degree. Accordingly,* ***the freedom vector is set to the y-axis*** *with the second angle being smaller than the first angle,; see column 8, lines 20-40 wherein the freedom vector is set to the y-axis while satisfying the distance constraints between the control points.* See *column 8 and column 10, lines 1-45*);

Determining an appropriate order for setting directions of freedom for the graphical object prior to setting any directions of freedom (*See Figs. 12A-13 wherein the first freedom vector to line 6-7 is set before he second freedom vector to line 8-7 is set for the character "Y"; see also column 9-10*) **so as to reduce the likelihood of numerical errors when the graphical object is rendered** (*See Figs. 12A-13 and column 9-10 and in particular column 10, lines 40-45 wherein the cited reference teaches that the freedom vector tells the control point the direction it should move and the proper definition of the freedom vectors allow the balance of the diagonal stroke weight of letter "Y" be achieved and thus effectively enhance digita, typeface or font data that is capable of providing resulting bitmap at low raster resolution wherein such method produce grid-aligned outlines for output to other raster output devices and thus reducing the likelihood of numerical errors)*; and

Setting the direction of a first direction of freedom to the direction of the first axis (*e.g., the cited reference at column 9 discloses setting the first direction of freedom to the*

coordinate axis wherein setting the freedom vectors is based on the characters; see column 8-9 wherein the cited reference teaches setting the first freedom vector to the coordinate axis for the letter "O") **based on the determination, the first freedom vector indicating a direction in which the control point can move to comply with the first constraint** *(See Figs. 12A-13 and column 8-10 wherein the cited reference teaches that the freedom vector tells the control point the direction it should move and the projection vector determines the desired distance projection between the control points. The freedom vector is defined to indicate a direction in which the control point can move to comply with the corresponding constraint).*

Although Kaasila does not explicitly disclose the claim limitation of "comparing the direction of the first projection vector to the direction of a first axis and the direction of a second axis", Kaasila at least suggests the claim limitation for the reasons as follows.

Kaasila discloses that the projection vector specifies a direction along which the difference in distance between the original position of the control point and the desired position of the control point is **measured**. *Specifying the projection vector also determines or calculates the first angle between the projection vector and the X-axis and the second angle between the projection vector and the Y-axis.* Thus, a first angle between the first direction of compliance and an X-axis and a second angle between the first direction of compliance and a Y-axis are readily determined/calculated from the projection vector. For example, in Fig. 8, the font instructions have been applied to the spline outlines of lowercase letter "o" in which the projection and freedom vectors are determined/calcualted for control points. The control point 9 has a projection vector being set to the X-axis such that it is readily determined/calculated that the first angle is 0 degree and the second angle is 90 degree from the vectors thus determined/calculated.

Accordingly, the freedom vector is set to the x-axis with the first angle being smaller than the second angle; see column 8, lines 20-40 wherein the freedom vector is set to the x-axis while **satisfying the distance constraints between the control points**. Moreover, Fig. 8 also shows that the projection and freedom vectors are determined for a plurality of control points. The control point 9 has a projection vector being set to the Y-axis such that it is readily determined/measured that the first angle is 90 degree and the second angle is 0 degree. Accordingly, **the freedom vector is set to the y-axis** with the second angle being smaller than the first angle; see column 8, lines 20-40 wherein the freedom vector is set to the y-axis while satisfying the distance constraints between the control points.

Stamm discloses control point data structure comprising a number of fields including the freedom vector, minimum distance, move exception, and the relationship type data filed wherein the freedom direction data field indicates the direction the control point can be moved, for example, roman, italic or the adjusted italic. The freedom direction specifies the direction/angle the control point can be moved including a first angle between a first direction of compliance and a first axis and a second angle between the first direction of compliance and a second axis. For the freedom direction data field being zero, the control point can be moved parallel to the grid lines. For the freedom direction data field being 2, the control point can be moved both perpendicular or parallel to **the adjusted italic angle**. See column 9-10 of Stamm. Moreover, **the x-direction or the y-direction data are further determined/calculated/converted from a number of data fields in the control point data structure** (see column 15-16). For one thing, the font table also determines values for features of a glyph such as stem width or serif length and the cvt category data field indicates whether the relationship specifies a stroke or distance

that corresponds to the cvt table (See column 10). Therefore, Stamm discloses "comparing the direction of the first projection vector to the direction of a first axis and the direction of a second axis" by converting the control point data fields into the x-direction data and the y-direction data, thereby calculating a first angle between a first direction of compliance of the control point and the x-axis. In a similar manner, converting the control point data fields into the x-direction data and the y-direction data calculates a second angle between a first direction of compliance and the y-axis, and determines that the first angle being smaller than the second angle by determining the type of Type Man Talk command and the parameters for the Type Man Talk command to graphically edit and display the fonts.

Therefore, taking the combined teaching of Kaasila and Stamm, it would have been obvious to one of the ordinary skill in the art to have modified Kaasila's method to include comparing the first angle with the second angle and determining the first angle being smaller than the second angle. Doing so would allow the generation of a variety of font programs/instructions in editing and graphically displaying a glyph (**Stamm column 17-18; Kaasila column 8, lines 20-40**).

Kaasila and Stamm do not explicitly teach "comparison" within the claim limitation of "using an axis comparison module to automatically and dynamically determine a first direction of freedom based on the direction of the first projection vector".

Kaasila discloses that the projection vector specifies a direction along which the difference in distance between the original position of the control point and the desired position of the control point is **measured**. *Specifying the projection vector also determines or calculates the first angle between the projection vector and the X-axis and the second angle between the*

projection vector and the Y-axis. Thus, a first angle between the first direction of compliance and an X-axis and a second angle between the first direction of compliance and a Y-axis are readily determined/calculated from the projection vector and the two angles are inherently compared by determining the first direction of compliance such as the projection vector. For example, in Fig. 8, the font instructions have been applied to the spline outlines of lowercase letter "o" in which the projection and freedom vectors are determined/calculated for control points. The control point 9 has a projection vector being set to the X-axis such that it is readily determined/calculated that the first angle is 0 degree and the second angle is 90 degree from the vectors thus determined/calculated and the two angles are readily compared in the calculations/determination. **Accordingly, the freedom vector is set to the x-axis** with the first angle being smaller than the second angle wherein the two angles are compared; see column 8, lines 20-40 wherein the freedom vector is set to the x-axis while **satisfying the distance constraints between the control points**. Moreover, Fig. 8 also shows that the projection and freedom vectors are determined for a plurality of control points. The control point 9 has a projection vector being set to the Y-axis such that it is readily determined/measured/compared that the first angle is 90 degree and the second angle is 0 degree. Accordingly, **the freedom vector is set to the y-axis** with the second angle being smaller than the first angle; see column 8, lines 20-40 wherein the freedom vector is set to the y-axis while satisfying the distance constraints between the control points.

Kurachi explicitly teaches a comparison of the two angles (See column 10, lines38-60). Kurachi teaches using an axis comparison module to determine a first direction of freedom wherein it is judged/compared whether the angle along the reference axis (x-axis of y-axis) falls

within a predetermined correction angle range by the comparison of the two angles to determine the outline correction amount (See column 13, lines 50-67 and column 14, lines 1-30).

Bloomberg explicitly teaches a comparison module (See column 17, lines 53-67 and column 18, lines 1-15). Bloomberg teaches using an axis comparison module to determine a first direction of freedom wherein the displacement vector is determined based on a comparison of at least two angles of the X and Y displacement vectors that enable the image processing to jump from one glyph position to the likely position of the next glyph.

Kaasila in view of Kurachi is seen to teach the claim limitation of "using an axis comparison module to automatically and dynamically determine a first direction of freedom based on the direction of the first projection vector".

Therefore, taking the combined teaching of Kaasila and Stamm and Kurachi, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to have modified Kaasila and Stamm's method to include a comparison of the first angle and the second angle, comparing the first angle with the second angle and determining the first angle being smaller than the second angle. Doing so would allow the generation of a variety of font programs/instructions in editing and graphically displaying a glyph (**Stamm column 17-18; Kaasila column 8, lines 20-40 and Bloomberg column 17, lines 53-67 and column 18, lines 1-15**).

Claim 17:

Kaasila further discloses the claim limitation of determining the number of constraints the control point is to comply with the iterative process (column 9-10).

Claim 18:

Kaasila further discloses the claim limitation of determining that the control point is to comply with one constraint (column 10, lines 1-45 and column 8).

Claim 19:

Kaasila further discloses the claim limitation of determining that the control point is to comply with two constraints (e.g., column 10, lines 1-45 which presented at least two set of projection vectors and freedom vectors such that the distance constraints are satisfied at each iterative step of adjusting the original control point to the desired control point).

Claim 20:

The claim 20 is subject to the same rationale of rejection set forth in the claim 1.

Claim 21:

Kaasila discloses, in Fig. 8, the font instructions have been applied to the spline outlines of lowercase letter “o” in which the projection and freedom vectors are determined for control points. The control point 9 has a projection vector being set to the X-axis such that it is readily determined/measured that the first angle is 0 degree and the second angle is 90 degree. **Accordingly, the freedom vector is set to the x-axis** with the first angle being smaller than the second angle; see column 8, lines 20-40 wherein **the freedom vector is set to the x-axis while satisfying the distance constraints between the control points**. Fig. 8 also shows that the projection and freedom vectors are determined for a plurality of control points. The control point 9 has a projection vector being set to the Y-axis such that it is readily determined/measured that the first angle is 90 degree and the second angle is 0 degree. Accordingly, **the freedom vector is set to the y-axis** with the second angle being smaller than the first angle,; see column 8, lines 20-

40 wherein the freedom vector is set to the y-axis while satisfying the distance constraints between the control points. See column 8 and column 10, lines 1-45.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jin-Cheng Wang whose telephone number is (571) 272-7665. The examiner can normally be reached on 8:00 - 6:30 (Mon-Thu).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung can be reached on (571) 272-7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jcw

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